CALIFORNIA
OCCUPATIONAL GUIDES

EDD Employment Development Department
State of California

POWER PLANT OPERATORS

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INTEREST AREA
REALISTIC

WHAT DOES A POWER PLANT OPERATOR DO?

POWER PLANT OPERATORS are key members of the crew that operate an electrical power generating plant. They may be designated by the energy source that is converted into electrical energy: Cogeneration (the production of both process steam and electricity), Biomass (wood waste, refuse), Hydroelectric (water), Fossil Fuel (coal, oil, natural gas), Geothermal, and Renewable (wind, solar, certain biomass plants) Plant Operators. They work under the direction of a shift supervisor, or other designated person in charge of the overall integration of the power plant into the electrical power distribution system. They deliver electric power from the generator(s) to the electrical transmission grid.

Power Plant Operators continuously monitor the operating status of their plant by observing control system parameters that indicate the output and the normal running conditions for the various systems and through field inspection. They prepare records and reports using computers. They inspect records, make logbook entries, and speak with other personnel about plant conditions. They may also operate equipment for starting, stopping, or regulating combustion turbine generators, heat recovery steam generators, steam generating fired boilers, auxiliary systems, and steam turbine generator units.

They must be alert to detect potential trouble situations early, report these conditions to the supervor, and take prompt corrective action.

Power Plant Operators perform the following tasks:

- Maintain and repair electrical power distribution machinery and equipment, using hand and power tools.
- Examine and test electrical power distribution machinery and equipment, using testing devices.
- Monitor control system parameters and switchboard gauges to ensure proper plant operation.
- Operate or control machinery that generates electric power.
- Adjust controls on equipment to generate specified electrical power.
- Compile and record operational data on specified forms.

WHAT SKILLS ARE IMPORTANT?

Important skills, knowledge, and abilities for Power Plant Operators include:

- Operation Monitoring – Closely monitoring distributed control systems, gauges, dials, or other indicators to make sure the plant as a whole, a process, or an individual machine is working properly.

- Operation and Control – Controlling operations of equipment or systems.
- Repairing – Repairing machines or systems using the needed tools.
- Engineering and Technology – Knowledge of the practical application of engineering science and technology. This includes applying principles, techniques, procedures, and equipment to the design and production of various goods and services.
- Mechanical – Knowledge of machines and tools, including their designs, uses, repair, and maintenance.
- Perceptual Speed – The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.
- Selective Attention – The ability to concentrate on a task over a period of time without being distracted.
- Troubleshooting – Determining the cause of troubleshooting errors and deciding what to do about it.

WHAT'S THE WORK ENVIRONMENT?

In modern plants much of the Power Plant Operator's time is spent in the control room, which may be air-conditioned and relatively quiet. However, when on inspection tours, or in older plants, Operators may encounter hot, noisy conditions around the auxiliary machinery, some of which is steam driven. Power Plant Operators must be able to walk and climb ladders to reach valve control wheels, be in good physical condition and strong enough to operate these devices. They must be able to stoop and squat to reach under and see under large fixed machinery such as boilers and condensers. They must be in good enough physical condition to lift and carry objects that may weigh up to 50 pounds for considerable distances. Good eyesight is needed to read distributed control system screens, water level gauges, tachometers, pressure gauges, and graphic condition charts. The environment is generally safe, despite the presence of high-pressure steam, water, fuel lines, and combustion taking place in the boiler or combustion turbine. Power Plant Operators also come into contact with various oils and grease.

Rigid safety procedures have been developed and published to ensure the safe operation of all machinery. The Occupational Safety and Health Agency (OSHA) review these for accuracy and completeness. All operators are trained in the safe operating procedures for the individual plant at which they will work.

Union Membership

Power Plant Operators may, in some cases, join the International Brotherhood of Electrical Workers (IBEW), the Utility Workers Union of America, International Union of Operating Engineers, or the Municipal Government Employees Union. Large utilities are in many cases union shops, but most small power plants and many larger ones are not unionized.

WHAT'S THE CALIFORNIA JOB OUTLOOK?

The following information is from the occupational projections produced by the Employment Development Department (EDD) Labor Market Information Division (LMID):

Power Plant Operators	
Estimated number of workers in 2002:	4,100
Estimated number of workers in 2012:	4,700
Projected Growth 2002-2012	14.6%
Est. openings due to separations by 2012:	1,100

These figures do not include self-employment.

This occupation will grow slower than average compared with all occupations in California. There will be a total of 1,700 job opportunities in this occupation during the projections period. Annual job opportunities in this occupation will average 170 with more opportunities coming from replacing workers who are leaving the field than job creation.

Trends

The Energy Policy Act of 1992 has increased competition in power generating utilities by allowing independent power producers to sell power directly to industrial and wholesale customers. Utilities, which historically operated as regulated local monopolies, are restructuring operations to reduce costs and compete effectively. Increasing use of automatic controls and more efficient equipment should increase productivity and decrease the demand for operators. Power Plant Operators may encounter strong competition for these jobs.

WHAT DOES THE JOB PAY?

California Earnings

The following information is from the Occupational Employment Statistics Survey of Employers by EDD/LMID:

Power Plant Operators 2005 Wages

Hourly wages range from	$22.74	to	$33.34
Average hourly wage	$27.72		
Average annual wage	$57,669		

These figures do not include self-employment.

Hours

The standard workweek is 42 hours on average with overtime paid at time and one-half of regular wages. In virtually all power generating plants Power Plant Operators must be willing to work rotating shifts, weekends, and holidays.

Benefits

Benefits include vacations, holidays and sick leave; health, dental and vision insurance; and retirement plans.

HOW DO I PREPARE FOR THE JOB?

Education and Training

Employers look for high school graduates with solid math and science background for entry-level operator positions. College-level courses or prior experience in a mechanical or technical job could be helpful. Employers increasingly require computer proficiency; as computers are used to keep records, generate reports, and track maintenance. Lassen Community College is the only college in California that offers courses in Power Generation Technology. Lassen also provides placement services at the completion of the program.

Workers selected for training as a fossil-fueled Power Plant Operator undergo extensive on-the-job and classroom training. Several years of training and experience are required to become a fully qualified control room operator or power distributor. With further training and experience, workers may advance to shift supervisor. Utilities generally promote from within; therefore, opportunities to advance by moving to another employer are limited. In addition to preliminary training as a Power Plant Operator, most workers are given periodic refresher training.

Licensing and Certification

At this time there are no licensing or certification requirements.

Continuing Education

Most power plants give their Power Plant Operators frequent refresher training.

HOW DO I FIND THE JOB?

The majority of Power Plant Operators are employed in the electrical power generation and transmission industry with the remainder working for local and State government agencies. Apply directly to private and public utilities engaged in generating electricity. Large utilities aggressively promote from within the organization.

Search these **yellow page** headings for listings of private firms:

- Private Utility Companies
- Power Generation

The following Internet resources can be helpful to the job search process:

America's Career InfoNet
www.acinet.org

America's Job Bank
www.ajb.dni.us

CalJOBS℠
www.caljobs.ca.gov

Job Search and Resume Writing
www.worksmart.ca.gov/success_tips_menu.html

Local Job Service Offices
www.edd.ca.gov/jsrep/jsloc.htm

Occupational Information Network (O*NET) Online
http://online.onetcenter.org

One-Stop Career Centers List
www.edd.ca.gov/ONE-STOP/pic.htm

For statewide and local projections, wages, employers by county, and other occupational information go to www.labormarketinfo.edd.ca.gov and select *Find an Occupation Profile*.

WHERE CAN THE JOB LEAD?

Power Plant Operators may advance with additional training and technical study to Senior Power Plant Operator, Shift Supervisor, and System Dispatcher positions.

OTHER SOURCES OF INFORMATION

American Public Power Association
2301 M Street, NW
Washington, DC 20037-1484
(202) 467-2900
www.appanet.org

International Brotherhood of Electrical Workers (IBEW)
900 Seventh Street, NW
Washington, DC 20001
(202) 833-7000
www.ibew.org

Lassen Community College
P. O. Box 3000
Susanville, CA 96130
(530) 251-8858
www.lassencollege.edu/programs/programs/programspowergeneration.html

CA Division of Apprenticeship Standards
For the closest district office, visit
www.dir.ca.gov/DAS/das.html

RELATED OCCUPATIONAL GUIDES

Stationary Engineers and Boiler Operators	No. 234

OCCUPATIONAL CODE REFERENCES

SOC *(Standard Occupational Classification)*

Power Plant Operators	51-8013

O*NET *(Occupational Information Network)*

Power Plant Operators	51-8013.00
Power Generating Plant Operators	51-8013.01
Auxiliary Equipment Operators, Power	51-8013.02

OES *(Occupational Employment Statistics)*

Power Plant Operators	95021